

Docket No. YOR920000435US1
U.S. Patent Application Serial No. 09/712,638

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1. A method comprising the steps of:
providing a set of sequences, wherein the sequences are not aligned;
5 discovering a plurality of patterns common to a plurality of the sequences; and
determining if a candidate sequence comprises a predetermined number of the patterns.
2. The method of claim 1, wherein the patterns common to a plurality of the set of
sequences comprise test patterns, wherein the sequences in set of sequences comprise test sequences,
10 and wherein the step of determining if a candidate sequence comprises a predetermined number of the
patterns comprises the step of determining if there are candidate patterns in the candidate sequence that
match all of the predetermined number of test patterns.
3. The method of claim 1, further comprising the step of determining if each of the plurality
15 of patterns is statistically significant.
4. The method of claim 1, wherein the step of discovering is performed without using any
knowledge about properties or features of sequences in the set of unaligned sequences.
- 20 5. The method of claim 1, further comprising the steps of:
if the candidate sequence comprises the predetermined number of patterns, adding the
candidate sequence to the set of sequences to create a new set of sequences; and
performing the step of discovering on the new set of sequences.
- 25 6. The method of claim 1, wherein each sequence comprises a series of symbols and
wherein each pattern comprises a plurality of positions, some of the plurality of positions each comprise
at least one expected symbol and other of the plurality of positions comprise positions which may be
occupied by any sequence character.
- 30 7. The method of claim 6, wherein, for one of the positions, the at least one expected
symbol is a plurality of expected symbols.

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8. The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant comprises the steps of selecting one of the patterns, determining if a probability that the selected pattern occurs in a sequence meets a predetermined threshold, and continuing to select additional patterns until each pattern has been selected.

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9. The method of claim 8, wherein the step of determining if a probability that the selected pattern occurs in a sequence meets a predetermined threshold further comprises the steps of using a second-order Markov chain method to determine the probability that the selected pattern occurs in a sequence and determining a natural logarithm of the probability that the selected pattern occurs in a
10 sequence.

10. The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant further comprises the steps of removing instances of each of the patterns from the set of sequences to create a new set of sequences and performing the step of
15 discovering on the new set of sequences.

11. The method of claim 3, wherein the step of determining if each of the plurality of patterns is statistically significant further comprises the steps of if any of the patterns is statistically significant, selecting a statistically significant pattern, modifying a composite descriptor to include the
20 selected pattern if the selected pattern is not already part of the composite descriptor, and continuing to select statistically significant patterns until all statistically significant patterns have been selected.

12. The method of claim 1, wherein the step of discovering a plurality of patterns common to a plurality of the sequences comprises the steps of:

25 selecting a predetermined threshold that indicates how many of the sequences should contain a pattern for the pattern to be considered common;

discovering patterns, if any, that are common to the predetermined threshold of sequences;

if there are no patterns common to the predetermined threshold of sequences, decreasing
30 the predetermined threshold; and

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performing, until the predetermined threshold is less than a predetermined amount, the step of discovering patterns, if any, that are common to the predetermined threshold of sequences and the step of if there are no patterns common to the predetermined threshold of sequences, decreasing the predetermined threshold.

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13. (Canceled)

14. (Canceled)

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22. (Canceled)

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23. A system comprising:

a memory that stores computer-readable code; and

a processor operatively coupled to said memory, said processor configured to implement said computer-readable code, said computer-readable code configured to:

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provide a set of sequences, wherein the sequences are not aligned;

discover a plurality of patterns common to a plurality of the sequences; and

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determine if a candidate sequence comprises a predetermined number of the patterns.

24. (Canceled)

- 5 25. An article of manufacture comprising:
a computer readable medium having computer readable code means embodied thereon,
said computer readable program code means comprising:
a step to provide a set of sequences, wherein the sequences are not aligned;
a step to discover a plurality of patterns common to a plurality of the sequences; and
10 a step to determine if a candidate sequence comprises a predetermined number of the
patterns.

26. (Canceled)

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Please deliver the following pages to:

NAME	COMPANY	FAX NUMBER
D. Vega	United States Patent Office	571.273.0299

NUMBER OF PAGES INCLUDING THIS COVER PAGE: 3**COMMENTS/INSTRUCTIONS:**

As requested, we enclose the missing [REDACTED] for the Supplemental Appeal Brief mailed on October 22, 2004.

CLAIMS

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